

What is claimed is:

1 1. A method for analyzing accuracy of industrial measurement data, the method
2 comprising the steps of:

3 compiling a plurality of measurements of a primary characteristic from a
4 representative cross-section of a population of devices;

5 providing a modeling function;

6 determining a variance from the modeling function for each measurement in the
7 plurality of measurements to form a corresponding plurality of variances;

8 evaluating the plurality of variances for discontinuities;

9 identifying a discontinuity within the plurality of variances; and

10 utilizing the discontinuity to determine a demarcation between accurate and
11 inaccurate measurement data.

1 2. The method of claim 1, wherein the industrial measurement data comprises
2 semiconductor manufacturing measurement data.

1 3. The method of claim 1, wherein the step of compiling a plurality of measurements
2 further comprises compiling a plurality of measurements from a profilometer.

1 4. The method of claim 2, wherein the primary characteristic comprises dishing in
2 metal.

1 5. The method of claim 2, wherein the primary characteristic comprises dishing in
2 copper.

1 6. The method of claim 1, wherein the representative cross-section of a population of
2 devices comprises multiple sites around a single device.

1 7. The method of claim 1, wherein the representative cross-section of a population of
2 devices comprises multiple devices within the population of devices.

1 8. The method of claim 1, wherein the step of providing a modeling function further
2 comprises providing a constant value.

1 9. The method of claim 1, wherein the step of providing a modeling function further
2 comprises providing a function relating the primary characteristic to a secondary
3 characteristic.

1 10. The method of claim 9, wherein the function is linear.

1 11. The method of claim 9, wherein the function is parabolic.

1 12. The method of claim 1, wherein the step of determining a variance from the modeling
2 function further comprises determining a residual value.

1 13. The method of claim 1, wherein the step of evaluating the plurality of variances for
2 discontinuities further comprises a graphical evaluation.

1 14. The method of claim 13, wherein at least a portion of the graphical evaluation is
2 manual.

1 15. The method of claim 1, wherein the step of evaluating the plurality of variances for
2 discontinuities further comprises a non-graphical evaluation.

1 16. The method of claim 15, wherein at least a portion of the non-graphical evaluation is
2 manual.

1 17. The method of claim 15, wherein the non-graphical evaluation is performed
2 exclusively by a processor.

1 18. A system analyzing the accuracy of industrial measurement data, the system
2 comprising:

3 a construct for compiling a plurality of measurements of a primary characteristic from
4 a representative cross-section of a population of devices;

5 a modeling function;

6 a construct for determining a variance from the modeling function for each
7 measurement in the plurality of measurements to form a corresponding plurality of variances;

8 a construct for evaluating the plurality of variances for discontinuities;

9 a construct for identifying a discontinuity within the plurality of variances; and

10 a construct for determining a demarcation between accurate and inaccurate
11 measurement data based on the discontinuity.

1 19. A method for analyzing accuracy of post-CMP dishing measurements rendered by a
2 profilometer in a semiconductor manufacturing process, the method comprising the steps of:

3 compiling a plurality of dishing measurements from a representative cross-section of
4 semiconductor devices;

5 providing a modeling function;

6 determining a variance from the modeling function for each dishing measurement in
7 the plurality of dishing measurements to form a corresponding plurality of variances;

8 evaluating the plurality of variances for discontinuities;

9 identifying a discontinuity within the plurality of variances; and

10 utilizing the discontinuity to determine a demarcation between accurate and
11 inaccurate dishing measurement data.

1 20. The method of claim 19, wherein the dishing comprises dishing in metal.

1 21. The method of claim 19, wherein the dishing comprises dishing in copper.

1 22. The method of claim 19, wherein the representative cross-section of semiconductor
2 devices comprises multiple sites around a semiconductor wafer.

1 23. The method of claim 19, wherein the representative cross-section of semiconductor
2 devices comprises multiple semiconductor wafers within a lot of semiconductor wafers.

1 24. The method of claim 19, wherein the representative cross-section of semiconductor
2 devices comprises multiple semiconductor wafers within multiple lots of semiconductor
3 wafers.

1 25. The method of claim 19, wherein the step of providing a modeling function further
2 comprises providing a constant value.

1 26. The method of claim 19, wherein the step of providing a modeling function further
2 comprises providing a function relating the dishing to a secondary characteristic.

1 27. The method of claim 26, wherein the step of providing a modeling function further
2 comprises providing a function relating the dishing to reticle density.

1 28. The method of claim 26, wherein the function is linear.

1 29. The method of claim 26, wherein the function is parabolic.

1 30. The method of claim 19, wherein the step of determining a variance from the
2 modeling function further comprises determining a residual value.

1 31. The method of claim 19, wherein the step of evaluating the plurality of variances for
2 discontinuities further comprises a graphical evaluation.

1 32. The method of claim 31, wherein at least a portion of the graphical evaluation is
2 manual.

1 33. The method of claim 19, wherein the step of evaluating the plurality of variances for
2 discontinuities further comprises a non-graphical evaluation.

1 34. The method of claim 33, wherein at least a portion of the non-graphical evaluation is
2 manual.

1 35. The method of claim 33, wherein the non-graphical evaluation is performed
2 exclusively by a processor.